Exemplary Technology-using Teachers: Perceptions of Factors Influencing Success

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Abstract

Exemplary technology-using teachers achieve meaningful technology use in learner-centered, constructive environments despite the presence of both internal and external barriers. In this study, we discuss factors that enabled teachers to overcome these barriers, as identified by 25 winners of statewide technology teacher awards. In addition, we explored teachers' perceptions of the relative value of both intrinsic and extrinsic factors that were perceived to play key roles in their success.

Exemplary technology-using teachers are defined as those who employ technology in learner-centered, constructivist environments as opposed to traditional teacher-directed environments (Ertmer, Gopalakrishnan, & Ross, 2001; Jonassen, Howland, Moore, & Marra, 2003). In general, a constructivist learning environment engages students in authentic, collaborative tasks, based on their interests. Within this type of environment, technology is used as a tool to support learners' engagement with the content, ultimately prompting them to use higher-level thinking skills (Becker, 1994; Ertmer et al., 2001). According to Berg, Benz, Lasley, and Raisch (1998), this is due, in part, to technology's ability to provide students with the tools "to actively process new information, to transform it, and to 'make it their own'" (p. 120).

Barriers Versus Enablers

Barriers to technology integration have been fairly well described within the educational literature (Ertmer, 1999; Ertmer, Addison, Lane, Ross, & Woods, 1999; Guha, 2003; Marcinkiewicz, 1993; Sheingold & Hadley, 1990). Ertmer classified these barriers into two primary categories: extrinsic (first-order) and intrinsic (second-order). While extrinsic barriers include lack of resources, adequate training, technical support, and time, intrinsic barriers include teachers' beliefs, visions of technology integration, and lack of confidence. Despite an acknowledged emphasis on barriers in the literature, little research has been conducted that examines the critical factors that enable teachers to overcome these barriers.

Enablers, like barriers, can be viewed as being either intrinsic or extrinsic. For example, access to hardware, quality software, the Internet, technical support, as well as administrative and peer support might be viewed as being extrinsic whereas personal beliefs, previous success with technology, and self-efficacy might be viewed as being intrinsic enablers. Also, like barriers, it is likely that intrinsic factors may be more important to teacher technology use than extrinsic enablers. That is, even if teachers have access, support, and time, it does not necessarily mean that they will integrate technology in meaningful ways. Furthermore, even though some teachers have access to only one computer, they still manage to use that one computer in an exemplary fashion. In other words, extrinsic enablers appear important, but not essential, to meaningful technology use.

Enablers and barriers may be viewed as having an inverse relationship. That is, as enabling factors increase, barriers are likely to decrease. For example, "lack of resources" may be considered a strong extrinsic barrier, whereas having ready access to hardware, software, and the Internet could be viewed as strong enablers. While an increase in enabling factors would not, *automatically,* lead to a decrease in barriers, or vice versa (the relationship is probably not a one-to-one relationship), it is likely that either a decrease in barriers or an increase in enablers would lead to greater technology use (Ertmer, 1999).

In a series of studies, Becker (1994, 2000) identified important factors that appeared to differ in the environments of exemplary computer-using teachers including peer use at the same school, staff development activities and support, smaller class sizes, and access to software. While Becker (1994) highlighted the potential influences of increasing extrinsic enablers, additional consideration needs to be given to intrinsic factors.

For example, research on self-efficacy, as well as teachers' beliefs and visions, suggest that intrinsic factors are also important to successful technology integration (Becker, 2000; Ertmer, 1999, 2005; Guha, 2003; Wang, Ertmer, & Newby, 2004). In a series of technology use studies (USEiT), Russell, Bebell, O'Dwyer, and O'Connor (2003) highlighted important relationships among teachers' levels of computer use and their beliefs about, and confidence for, using technology. Surprisingly, high confidence for using technology was not a direct predictor of teachers' classroom uses. Rather, confidence appeared to be moderated by years of teaching experience. That is, while teachers who recently entered the profession (within the past five years) reported having more confidence using computers than teachers who had been in the profession for six or more years, their beliefs about the negative effects of computers on students were stronger. In addition, although the newer teachers used technology more often than experienced teachers for preparation of instructional materials and professional communication, they directed their students to use technology significantly less than more experienced teachers. This suggests that while new teachers may be more comfortable with the technology tools, they may lack an appreciation for the value of technology as an *instructional* tool. Alternatively, they may lack the organization and management skills needed to use technology effectively in the classroom, skills that develop through years of experience.

While researchers have delineated a number of important characteristics of exemplary-technology using teachers, it is unclear whether any of these characteristics are *essential* for teachers to become exemplary. For example, while 75% of the exemplary users in the Hadley and Sheingold (1993) study had extensive teaching experience (more than 13 years), only 59% of the participants in the Ertmer et al. study (2001) had this many years. Additionally, while 50% to 75% of the participants in Becker's study (1994) had accumulated a large number of credits beyond the bachelor's degree, only 35% of the participants in the Ertmer et al. study (2001) had reached this level of education. This suggests that either these "requirements" have gradually evolved as technology has become more embedded in our lives, or that these types of characteristics are not essential

to exemplary technology use. It is important to determine which enablers, if any, have the potential to exert the *strongest* influence over teachers' abilities to use technology in exemplary ways so that teacher educators, as well as those who provide professional development to inservice teachers, can support the most fruitful paths to accomplished use.

Purpose of the Study

There is little information available that delineates the relative value of intrinsic enablers over extrinsic enablers, or that supports the relative importance of one intrinsic enabler over another in facilitating and supporting teachers' development as exemplary technology users. This study was designed to explore teachers' perceptions of the relative value of a number of intrinsic and extrinsic factors that were believed to play key roles in their success as exemplary technology users. Ultimately, we hoped to provide both teacher educators and professional developers with specific suggestions for preparing and supporting preservice and inservice teachers in their efforts to become effective technology-using teachers. The research questions guiding this study included:

1. What are the perceptions of exemplary technology-using teachers regarding the factors that have most influenced their success?
2. To what extent do exemplary technology-using teachers perceive intrinsic vs. extrinsic factors as being more critical?
3. Which teacher characteristics, if any, are significantly related to exemplary technology use?

Methods

An online anonymous survey (see Appendix, page 60) was used to explore the perceptions of exemplary technology-using teachers regarding the factors that influenced their technology integration success. Participants were selected from five Midwestern technology educator award programs. The award winners were e-mailed an invitation to participate in the study, including a link to an online survey that was available via a secure server. Due to the anonymous nature of the data collection methods, this research was deemed exempt by the human subjects Institution Review Board. Both quantitative (correlations, t-tests) and qualitative (pattern seeking) analysis methods were used to examine teachers' perceptions of the factors that influenced their technology integration success.

Procedures

The study was designed and implemented by a research team consisting of two doctoral students and one faculty member from the Educational Technology program at a large Midwestern university. All three researchers had a background in K–12 education and had taught courses related to technology integration for preservice teachers. In addition, one of the doctoral students was a previous recipient of an exemplary technology teacher award.

The researchers collected e-mail addresses from five award program Web sites and established a database of possible participants. The sample consisted of recipients of exemplary technology-using teacher awards from the last 15 years from five different organizations within the Midwest, selected due to the researchers' familiarity with the programs and organizations. These organizations included the Michigan Consortium for Outstanding Achievements in Teaching with Technology (MCOATT), Michigan Association for Computer Users in Learning (MACUL), Ohio SchoolNet (OSN), Illinois Computer Educators (ICE), and Indiana Computer Educators (ICE). Specific criteria for each award, especially from earlier years, were not available to the researchers. However, current criteria suggested that in general, participants were nominated based on their ability to use technology in innovative ways and to encourage meaningful student use. In all cases, winners were evaluated and selected by a panel of their peers.

From the initial sample of 48 educators, 25 responded to the survey for a 52% return rate. Identified participants were e-mailed twice, once for the initial invitation and once as a reminder. The final sample included teachers who ranged in years of teaching experience from three to 32 years, with an average of 16 years. The majority of educators were female (n=16) and had completed their master's degrees (n=20). About half of the participants (n=12) had been teaching 13 years or less, and all participants rated themselves as having very high (n=16) or high (n=9) computer skills.

Survey Instrument

The 18-item survey (see Appendix) included six demographic questions, two Likert-scale items (consisting of 20 subcomponents), eight open-ended items, and one checklist item (consisting of nine subcomponents). For example, participants were asked to "describe your most memorable or most useful professional development experience," and "If you could put your finger on one thing that influenced you the most in terms of integrating technology in your classroom, what would that one thing be?" In addition, participants rated their perceptions of the importance of both intrinsic (e.g., inner drive, beliefs, and attitudes) and extrinsic (e.g., professional development, resources, and support) factors on a five-point Likert scale (from 2, not influential to 5, extremely influential). Participants gave a score of 1 when a specific item was judged as not applicable to them.

The survey was developed after reviewing similar surveys in the literature (Bullock, 2004; Hadley & Sheingold, 1993; Iding, Crosby, & Speitel, 2002; Lumpe & Chambers, 2001). Expert reviewers, including an educational technology faculty member and an elementary school principal, provided suggestions for improvement. The final survey instrument incorporated these changes, including wording and specific details to assure that the items were relevant to exemplary technology-using teachers, thus assuring some measure of face validity. The survey had a Cronbach alpha of 0.76, suggesting that the survey was moderately reliable.

Data Analysis

In order to answer our first research question regarding exemplary technology-using teachers' perceptions of the factors that most influenced their technology integration success, we calculated means and standard deviations for each of the factors included on the survey and then rank-ordered them from highest to lowest. To determine whether intrinsic or extrinsic factors were perceived as playing a more influential role, a paired samples t-test was used to compare participants' perceptions of the importance of extrinsic factors (e.g., professional development; influential people; administrative, parental, peer, and technology support; Internet, hardware, and software access) vs. intrinsic factors (e.g., inner drive, personal beliefs, commitment, confidence, and previous success with technology). Triangulation data were provided through participants' responses to the survey question: "If you could put your finger on one thing that influenced you the most, in terms of integrating technology in your classroom, what would that one thing be?"

Pearson product correlations were calculated to determine the relationships among different teacher characteristics (e.g., gender, highest degree earned, years of teaching experience, and current levels of teaching assignment) and their perceptions of the importance of intrinsic vs. extrinsic enablers. In addition, an independent t-test was used to examine whether exemplary technology-using teachers, with more or less years of teaching experience, differed significantly in their perceptions of the importance of intrinsic and extrinsic enablers.

Results

When participants were asked to rate the level of influence of each enabler on their successes as exemplary technology-using teachers, *inner*

drive and *personal beliefs* (M = 4.84) were rated the most influential, while *preservice education* was rated the least influential (M = 2.69). Items to which participants responded "not applicable" were removed from our calculations, in effect reducing the number of respondents for that particular factor. For example, note that preservice education was rated as "not applicable" by nine participants (see Table 1). This may have been due to the fact that many of our participants completed their teacher education programs prior to the integration of technology into the college classroom.

A paired-samples t-test was conducted to determine if the difference between participants' ratings of the influence of intrinsic and extrinsic factors was significant. The mean rating for intrinsic factors (M = 4.51, SD = 0.31) was significantly higher [$t(24) = 7.23$, $p < .001$)] than the mean rating for extrinsic factors (M = 3.86, SD = 0.51), indicating that participants perceived intrinsic factors to be significantly more influential than extrinsic factors in their ability to become successful technology-using teachers. This is supported by their responses to the open-ended survey items. When asked what most influenced their uses of technology, the majority of participants described how they were committed to using technology because they believed that it increased their ability to enhance student learning. One teacher wrote, "Seeing my students succeed when using it. The more success they had, the more I wanted to use it." Another teacher indicated that the most influential factor in using technology was, "the desire to engage students as active learners and the belief that technology is the tool to achieve that desire."

Table 1: Teachers' Perceptions of the Influence of Factors on Integration Success

Factors	*N*	*M*	*SD*
Inner Drive	25	4.84	.37
Personal Beliefs	25	4.84	.37
Commitment	25	4.76	.52
Confidence	25	4.64	.64
Previous Success	25	4.56	.51
Access to Hardware	25	4.56	.65
Access to Software	25	4.56	.65
Professional Development	25	4.44	.71
Time	25	4.36	.70
Access to Internet	25	4.28	.84
Current Setting	25	3.84	1.11
Administration	25	3.84	1.14
Influential People	25	3.80	1.08
Technology Support	25	3.56	1.04
Peers	24	3.42	1.02
Previous Failure	24	3.37	1.01
Class Size	24	3.33	1.01
Parental Support	24	3.04	1.08
Preservice Education	16	2.69	1.08

Pearson product correlation coefficients indicated no significant relationships between 1) teachers' levels of computer proficiency, or 2) the number of credit hours earned after a bachelor's degree and the perceived importance of specific intrinsic or extrinsic factors. However, years of teaching experience was significantly correlated, at the .05 level, with participants' perceptions of the importance of professional development (r = .43), commitment to using technology (r = .47), and the influence of previous success (r = .41). In other words, the longer teachers had been teaching, the more important these enablers were perceived to be (see Table 2). In addition, females tended to rate personal beliefs as significantly more influential than did males (r = .59; $p < .01$). Females also rated technology support (r = .49) and access to hardware (r =.40) as more important to their success than males did.

Table 2: Correlations between Teacher Characteristics and Influencing Factors

Influencing Factors	Years Teaching	Gender	Computer Proficiency	Hours Beyond Degree
Professional Development	.431*	-.005	-.005	-.043
Personal Beliefs	.166	.582**	.127	-.368
Commitment	.470*	.137	-.026	-.061
Previous Success	.411*	-.329	-.161	-.063
Tech Support	.232	.492*	.085	-.001
Access to Hardware	-.322	.397*	.136	.194

*Note. * Significant at the .05 level; ** Significant at the .01 level.*

An independent-samples t-test indicated that exemplary technology-using teachers with more experience (years > 13) rated intrinsic factors as being significantly more influential (p = .016) than did those with less experience (years ≤ 13). Experienced teachers (n =13) rated intrinsic factors as "extremely" influential (M = 4.65), while less experienced teachers (n = 12) rated them as "moderately" influential (M = 4.36). While teachers with more experience also rated extrinsic factors (M = 4.05) as more influential than did teachers with less experience (M = 3.67), the difference was not significant (p = .059). In general, teachers with more experience rated more factors as being moderately or extremely influential. For example, every teacher in the more experienced category rated "commitment to using computers to enhance student learning" as being extremely influential (M = 5), while teachers with less experience rated it as moderately influential (M = 4.5).

Discussion

The results from this study suggest that the factors that exemplary technology-using teachers perceive as most strongly affecting their ability to be effective technology users are intrinsic factors such as confidence and commitment, as opposed to extrinsic factors such as resources and time. That is, even when resources and time are limited, exemplary teachers achieve effective use, quite possibly because of their strong beliefs, personal visions, and commitment to using technology. As noted by Zhao and Frank (2003), "… most factors do not directly influence technology uses in a linear fashion; rather, their influence is mediated or filtered by teachers' perceptions" (p. 817). This is also similar to what Becker (1994) and Hadley and Sheingold (1993) reported: The exemplary teachers in their studies described problems with resources as being less severe than did other teachers. Perhaps because of their confidence, or previous successes with technology, exemplary technology-using teachers are able to devise more ways to overcome obstacles. Based on previous literature (Ertmer, 1999; Ertmer et al., 1999; Marcinkiewicz, 1993; Sheingold & Hadley, 1990), as well as the results of this study, intrinsic belief systems appear to be a strong, if not the primary, contributing factor in teachers' efforts

to use technology. This suggests the importance of providing teachers with opportunities to reflect on their own beliefs within a supportive and collaborative environment and to share their stories of successful technology integration with their peers (Sandholtz, Ringstaff, & Dwyer, 1997; Zhao & Frank, 2003). In this way, it is anticipated that all teachers, including those who are faced with a limited amount of resources, can find ways to use their resources to improve student learning based on their strong personal commitments and pedagogical beliefs about the power of technology to enhance learning.

In general, teachers in this study rated intrinsic factors as being significantly more influential than extrinsic factors in their decisions to use technology. This was supported further by teachers' written responses in which they described the single most influential factor as being their strong commitment to helping students learn. This result is similar to that described by Ertmer et al. (1999; 2001) and others (Dexter, Anderson, & Becker, 1999; Sheingold & Hadley, 1990). While *novice* technology users may base *initial* adoption decisions on their own goals and needs, as noted by Zhao and Frank (2003), more accomplished users appear to focus more on their students' needs, especially when making classroom implementation decisions (DuFour, 2000). The results of this study suggest that, as teachers progress along the continuum from novice to accomplished users, it may be beneficial to provide opportunities for them to observe and discuss the direct impacts of technology on student learning as obtained by more accomplished users. Future research is needed to verify the effectiveness of this suggestion.

In this study, teachers with more experience tended to perceive a greater number of factors as being highly influential than teachers with less experience. For example, more experienced exemplary technology-using teachers ranked confidence, time, and technology support significantly higher than those with less experience. This could be due, in part, to the challenges these more experienced teachers faced while mastering technology skills. Thus, the longer one has been teaching, the more important professional development, commitment to improving student learning, and previous successes were perceived to be for successful technology use. These results may be explained by the fact that teachers who entered the teaching profession prior to the integration of technology into teacher education programs are more likely to be self-taught computer users (Hadley & Sheingold, 1993). It is likely that the majority of these teachers learned their skills through their own initiative and on their own time, attending professional development workshops and slowly gaining confidence as they gradually achieved more success. This finding is supported by the high rating given by the more experienced teachers to the factor of personal commitment (M = 5), which may be due to the time and effort they had previously invested to effectively integrate technology, as well as their ongoing commitment to remain current with technological advances. This is further supported by the lack of perceived influence that preservice education had on exemplary use (M = 2.69).

One of the largest differences between the experienced and newer teachers in this study was the relatively higher level of importance that teachers with more experience (M = 4.0; M = 3.1, respectively) gave to the factor of technology support. Similar to the results described earlier, this could be attributed to the fact that teachers who had been teaching longer *required* more support due to having had less formal training with technology. Teachers with fewer years of teaching experience may not have needed as much technology support.

Finally, all the teachers in this study rated professional development as one of the more influential *extrinsic* factors (M = 4.44). As noted earlier, for teachers who entered the teaching profession prior to the introduction of technology into preservice teacher education, professional development may provide the most accessible and affordable means to develop these skills. Even for newer teachers who had received technology training in their teacher education programs, professional development enables them to continue to update and refine their skills. Furthermore, after having gained a better handle on classroom management and curricular needs, newer teachers are also in a better position to learn how to *apply* these skills through professional development programs.

While this study was not designed to determine which *type* of professional development approach was most effective in helping teachers become exemplary technology users, the participants in this study shared their perceptions about which approaches have worked best for them. For example, more than 76 percent of the teachers (n = 19) in this study identified workshops, seminars, or conferences as their preferred professional development approach. Participants emphasized that these choices were based on relevance and flexibility: What they wanted most was to learn new ideas and tools that were directly related to their current situations, and that were presented at flexible times. Furthermore, they confirmed the importance of collaboration while learning new skills and adopting new teaching methods. This idea has been advocated in the professional development literature for many years (Becker & Riel, 1999; Putnam & Borko, 2000) and continues to be seen as an important component in effecting teacher change (Ertmer, 2005; Richardson, Ertmer, Aagard, Ottenbreit, Yang, & Mack, in press).

Limitations and Suggestions for Future Research

Results of this study are limited by the small sample size and the use of five different technology-award programs to identify our participants. While award criteria were similar, this may have biased our sample by eliminating additional potential participants. Future research should draw from a larger sample, in order to increase the generalizability of the results. The survey instrument was not as reliable as the research team would have liked; a more reliable instrument would enhance the validity of the study. Interpretation of the survey results also would have been enhanced if a larger number of open-ended items had been included to allow participants to explain their responses. In addition, follow-up interviews or observations would have provided a fuller understanding of the survey results. These suggestions should be incorporated into future uses of the survey instrument.

As an exploratory study, this research represents a small step toward identifying the most important factors in the development of exemplary technology-using teachers. It is important to more fully understand these factors (such as beliefs, practices, and developmental processes) in order to encourage other teachers to achieve similar levels of technology integration. Thus, future researchers should investigate the critical experiences, beliefs, and practices that have contributed to teachers' ability to integrate technology successfully in order to help us understand how to achieve similar results with other teachers.

Conclusion / Implications

Based on the literature, teachers typically encounter a variety of barriers (i.e., time, resources) that make the integration of technology difficult (Ertmer et al., 1999). However, despite these barriers, many teachers still succeed in integrating technology into their classrooms in exemplary ways. This study identified many of the factors that exemplary technology-using teachers perceived as having enabled them to overcome these barriers. As such, these factors provide a starting point for examining our current teacher development programs and inservice professional development efforts to determine if, and how, we are preparing teachers to deal with these types of barriers.

One of our goals for investigating the experiences of exemplary technology-using teachers was to identify ways that we might better prepare preservice teachers to integrate technology. Based on the results of this study, it appears that more attention needs to be given to intrinsic factors (beliefs, attitudes, and confidence) during preservice education, as these are perceived as being critical to later success. For example, by incorporating authentic examples into methods courses and providing access to exemplary teacher models (Albion, 2003; Ertmer, Conklin, Lewandowski, Osika, Selo, &

Wignall, 2003), preservice teachers may gain confidence for, and knowledge about, using technology to support student learning. In this way, preservice students can gain the abilities needed to relate technology integration skills to real situations, closely following the "just-in-time" model acknowledged as being most valuable by the more experienced teachers in this study.

This study highlighted the perception that exemplary technology use is rooted in teachers' internal beliefs and commitments to student learning, but is also supported by important extrinsic factors (professional development, technology support) that enable inservice teachers to translate those visions into practice. Educators need to be aware of the important influence that teachers' beliefs and personal commitment have on their practices and to incorporate strategies into their professional development programs that address these beliefs and increase teachers' commitment. While previous research supports this contention (Albion, 2003; Ertmer et al., 2003), additional research is needed to verify it. Asking teachers to share their stories and to reflect on their technology integration experiences (Windschitl & Sahl, 2002), is one potential method for highlighting the possibilities of technology, while positively shaping teachers' personal beliefs about those benefits. Furthermore, the results of this study highlight important ways in which administrators can support their teachers' technology efforts through the provision of relevant training opportunities and ongoing support.

The findings of this study highlight the factors and methods that exemplary technology-using teachers perceive have enabled them to overcome barriers to meaningful technology use. These results have important implications for both pre- and inservice educators regarding not only which factors might most enable technology integration, but also how to best develop these factors within teachers. By explicitly addressing these factors within our future development efforts, it is expected that we will enable both current and future teachers to overcome the common barriers to technology integration and begin their own journeys toward exemplary technology integration.

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Appendix

Exemplary Technology Integration Survey

Thank you so much for your participation in our survey! Completing this survey should take approximately 10 minutes of your time.

Gender: ____ Male ____ Female
Number of years you have taught: _____
Subject you teach: _____
Grade level you teach: _____
Highest university degree completed: _____
Approximate number of additional credits beyond this degree: _____

If you could put your finger on one thing that influenced you the most in terms of integrating technology in your classroom, what would that one thing be?

_____
_____
_____

Rate your current level of computer proficiency:

____ Very high (i.e., I've written some programs/scripts or courseware, and/or could teach others how to use computers)
____High (I can use computers without referring to manuals/ instructions/other help)
____ Average (I use applications like word processing, spreadsheets, and/or basic Web searches)
____ Fair (I can use applications with assistance)

What else could your school do to support your computer use in your classroom? _____
_____

Regarding computers and technology integration, what would you like to learn more about? _____
_____

Describe your most memorable or most useful professional development experience. _____
_____

If given a choice, in which types of professional growth opportunities do you prefer to participate? (Select all that apply.)

___ Workshops and seminars
___ Conferences
___ District or school sponsored courses
___ Online or Web-delivered professional development
___ One-on-one training with technology coordinator or technology aide
___ Group training with technology coordinator or technology aide
___ Release time for department or grade level planning related to technology
___ Release time for individual professional development related to technology
___ Other

If your answer included "other" for the previous question, please explain. _____
_____

If you could make a recommendation to other teachers who wanted to do more with technology in their classrooms, what recommendation would you make? _____
_____
_____

Rate the following elements in terms of the influence they have had on your success in integrating technology in your classroom.

	1 Not Applicable	2 Not influential	3 Slightly influential	4 Moderately influential	5 Extremely influential
Inservice professional development (workshops, conferences, training, etc)					
Current setting—School environment allows for, or encourages, the integration of technology					
Inner drive—Willingness to spend extra or personal time on developing lessons that incorporate technology					
Personal beliefs/attitudes—Beliefs that technology is important to student learning					
Commitment to using computers to enhance student learning					
Time—Opportunities to explore or "play" with new technologies to incorporate into classroom					
Preservice educational experiences					
Key influential people—Mentors or other personal influences on your technology integration					
Confidence—How comfortable you are with technology use					
Previous success with technology					
Previous failure with technology					
Support/encouragement from administration					
Support from parents					
Support from other teachers or peers					
Class size					
Access to technical support					
Access to the Internet					
Access to hardware					
Access to quality software					
Other:					
Other:					

If your answer included "other" in the previous question, please explain. _____

_____

Are there any other experiences that have influenced your use of technology? _____

_____

Thank you for your time!